DOE/RL-88-21
Hanford Waste Vitrification Plant
Rev. 5, 9/26/96

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e. 12 character/inch) .

FORM **3**

DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER: W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED *(mo., day, & yr.)*	COMMENTS
		Pending Approval

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete Item below.)*

MO.	DAY	YEAR
03	22	1943

**FOR EXISTING FACILITIES, PROVIDE THE DATE (mo., day, & yr.) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)*
**The date construction of the Hanford Facility commenced.*

☐ 2. NEW FACILITY *(Complete item below)*

MO.	DAY	YEAR

FOR NEW FACILITIES, PROVIDE THE DATE, *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT ☒ 2. FACILITY HAS A FINAL PERMIT

III. PROCESS - CODES AND CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	ACRES OR HECTARES
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING SECTION III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

	A. PROCESS	B. PROCESS DESIGN CAPACITY	

LINE NUMBER	CODE *(from list above)*	1. AMOUNT *(specify)*	2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY			
X-1	*S02*	*600*	*G*				
X-2	*T03*	*20*	*E*				
1	T01	33,308	V				
2	T04	250**	H				
3	S02	416,350	L				
4	S05	2,271**	L				
5	T01	66,616	V				
6	S02	696,440	L				
7	T01	417	V				
8	S02	431,490	L				
9	S01	1,479,935	L				
** Process codes T04 and S05 are being used to designate the Hanford Waste Vitrification Plant Melter as a "miscellaneous unit" per Washington Administrative Code 173-303-680 "Miscellaneous Units."							
10			L				

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (CODE "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

T01, T04, S02, S05 (Vitrification and Related Treatment and Storage Processes)

The Hanford Waste Vitrification Plant (HWVP) is proposed to be located in the 200 East Area of the Hanford Facility[1]. At the HWVP, mixed waste received from a pretreatment unit will be treated in a series of tanks. Treatment will include concentration by evaporation, adjustment with chemicals and glass forming materials, and immobilization in borosilicate glass (vitrification) (T01, T04)[2]. The vitrified waste will be cast into stainless steel canisters and stored at the HWVP until the canisters are shipped to a national repository. The HWVP Melter is designed to process 250 liters per hour of melter feed, producing 100 kilograms per hour of borosilicate glass. The associated HWVP treatment tanks will be designed to process 33,308 liters per day of mixed waste. The dangerous waste treatment tanks will be capable of storing dangerous waste (S02) under offnormal conditions. The HWVP Melter also will be capable of storing dangerous waste (S05)[2] under offnormal conditions. The total storage capacity of the tanks included in the vitrification process is 416,350 liters. The storage capacity of the HWVP Melter is 2,271 liters.

T01, S02, (Tank Treatment and Storage of Secondary Mixed Waste)

Secondary liquid mixed waste generated by the HWVP will be collected and treated (T01) in a series of tanks. Treatment will include neutralization, filtration, sorption, and evaporation. The high-activity fraction from the treatment process will be recycled. The remainder of the waste will be transferred to the Double-Shell Tank (DST) System. Treatment design capacity will be 66,616 liters per day of mixed waste. The dangerous waste treatment tanks also will be capable of storing dangerous waste (S02) under offnormal conditions. The total storage capacity of tanks handling secondary liquid mixed waste is 696,440 liters.

T01, S02 (Neutralization, Solar Evaporation, and Tank Storage of Secondary Nonradioactive Dangerous Waste)

Secondary nonradioactive dangerous waste generated from leaks, spills, and/or overflows from chemical storage, makeup, and feed tanks will be collected, treated in a series of tanks (T01), and stored (S02) at the HWVP. Treatment will include neutralization, concentration by solar evaporation, and decomposition of dangerous constituents during storage. Treatment design capacity is 417 liters per day with a storage design capacity of 431,490 liters.

S01 (Storage of Vitrified Waste in Canisters)

The vitrified waste will be cast into stainless steel canisters and stored (S01) at the HWVP until the canisters are shipped to a national repository[3]. Approximately 2,000 canisters of vitrified waste will be stored at the HWVP. Conservatively assuming that the vitrified waste will fill 100 percent of the total canister volume (0.73 cubic meters), the total container storage capacity is 1,479,935 liters.

1. Per Amendment Four of the Hanford Federal Facility Consent and Order (Tri-Party Agreement), construction of a high-level waste virtification plant, such as the HWVP, was delayed until the year 2002 to accommodate changes in waste management planning and prioritization. Hot startup of a high-level vitrification plant has been delayed until the year 2009 (Tri-Party Agreement Milestone M-51-03).
2. The HWVP Melter, to be used for treatment (vitrification) (T04) and storage (S05) of dangerous waste, will be considered a 'miscellaneous unit' per Washington Administrative Code (WAC) 173-303-680 "Miscellaneous Units."
3. Because the vitrified waste has been classified as a listed waste (Dangerous Waste Codes F003 and F005), the U.S.Department of Energy, Richland Operations Office intends to submit a petition to the U.S. Environmental Protection Agency to delist the vitrified waste produced at the HWVP. In addition, a variance, per WAC173-303-072 "Procedures and Bases For Exempting and Excluding Wastes," will be submitted to the Washington State Department of Ecology requesting a variance for the borosilicate glass from the dangerous waste regulations.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describe the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measuer which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.

3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES				
				1. PROCESS CODES *(enter)*				2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	*K054*	*900*	*P*	*T03*	*D80*			
X-2	*D002*	*400*	*P*	*T03*	*D80*			
X-3	*D001*	*100*	*P*	*T03*	*D80*			
X-4	*D002*			*T03*	*D80*			*included with above*
1	D001	12,439,660	K	T01	T04	S02	S05	Treatment-Tank/ Treatment -Other, Miscellaneous Unit, Storage-Tank/Storage-Other, Miscellaneous Unit
2	D002		↓	↓	↓	↓	↓	↓
3	D003		↓	↓	↓	↓	↓	↓
4	D004		↓	↓	↓	↓	↓	↓
5	D005		↓	↓	↓	↓	↓	↓
6	D006		↓	↓	↓	↓	↓	↓
7	D007		↓	↓	↓	↓	↓	↓
8	D008		↓	↓	↓	↓	↓	↓
9	D009		↓	↓	↓	↓	↓	↓
10	D010		↓	↓	↓	↓	↓	↓
11	D011		↓	↓	↓	↓	↓	↓
12	WP01		↓	↓	↓	↓	↓	↓

13	WP02		↓	↓	↓	↓	↓	↓
14	WT01		↓	↓	↓	↓	↓	↓
15	F003		↓	↓	↓	↓	↓	↓
16	F005		↓	↓	↓	↓	↓	Included With Above
17	D002	17,161,200	K	T01	S02			Treatment-Tank/Storage of Secondary Liquid Mixed Waste
18	D004		↓	↓	↓			↓
19	D005		↓	↓	↓			↓
20	D006		↓	↓	↓			↓
21	D007		↓	↓	↓			↓
22	D008		↓	↓	↓			↓
23	D009		↓	↓	↓			↓
24	D010		↓	↓	↓			↓
25	D011		↓	↓	↓			↓
26	WP01		↓	↓	↓			↓
27	WP02		↓	↓	↓			↓
28	WT01		↓	↓	↓			↓
29	F003		↓	↓	↓			↓
30	F005		↓	↓	↓			Included With Above
31	D002	149,900	K	T01	S02			Treatment-Tank/Storage of Secondary Liquid Mixed Waste
32	WT01		↓	↓	↓			↓
33	WT02		↓	↓	↓			Included With Above
34	WT01	876,300	K	S01				Storage-Container Vitrified Waste
35	F003		↓	↓				↓
36	F005		↓	↓				Included With above
37								
38								
39								
40								

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The mixed waste that will be treated and stored in stainless steel canisters at the HWVP will consist of existing and future high-activity waste stored in the DST System. The mixed waste will be designated as a dangerous waste due to ignitability (D001), corrosivity (D002), reactivity (D003), and the presence of spent nonhalogenated solvents (F003 and F005). The mixed waste also will be designated state-only extremely hazardous waste and/or dangerous waste for toxicity (WT01) and persistent (WP01, WP02).

The secondary liquid mixed waste is expected to be designated dangerous waste due to corrosivity (D002), and to the presence of spent nonhalogenated solvents (F003 and F005). The secondary liquid mixed waste also will be designated state-only waste for persistent (WP01, WP02) and toxicity (WT01, WT02). Treatment is expected to eliminate the extremely hazardous waste designation of the secondary liquid mixed waste before the mixed waste is transferred out of this unit.

The secondary nonradioactive chemical waste that will be treated and stored at the HWVP is expected to be designated dangerous waste due to corrosivity (D002) and state-only waste for toxicity (WT01, WT02). Treatment is expected to eliminate the extremely hazardous waste characteristics designation before treatment and storage in a solar evaporation tank.

The vitrified waste stored in stainless steel canisters is expected to be designated dangerous waste due to the presence of spent nonhalogenated solvents (F003 and F005) and state-only waste for toxicity (WT01).

When the HWVP Project is underway, a Part A, Form 3, permit application revision could be pursued as required by the dangerous waste regulations to change the dangerous waste number(s) and revise the estimated annual quantity of waste.

V. FACILITY DRAWING **Refer to attached drawing(s).**

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS **Refer to attached photograph(s).**

All existing facilities must include photographs *(arial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION **This information is provided on the attached drawing(s) and photograph(s).**

LATITUDE *(degrees, minutes, & seconds)*					LONGITUDE *(degrees, minutes, & seconds)*				

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

☐ B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*		

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
John D. Wagoner, Manager U. S. Department of Energy Richland, Operations Office	John D. Wagoner	09/26/1996

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
SEE ATTACHMENT		

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

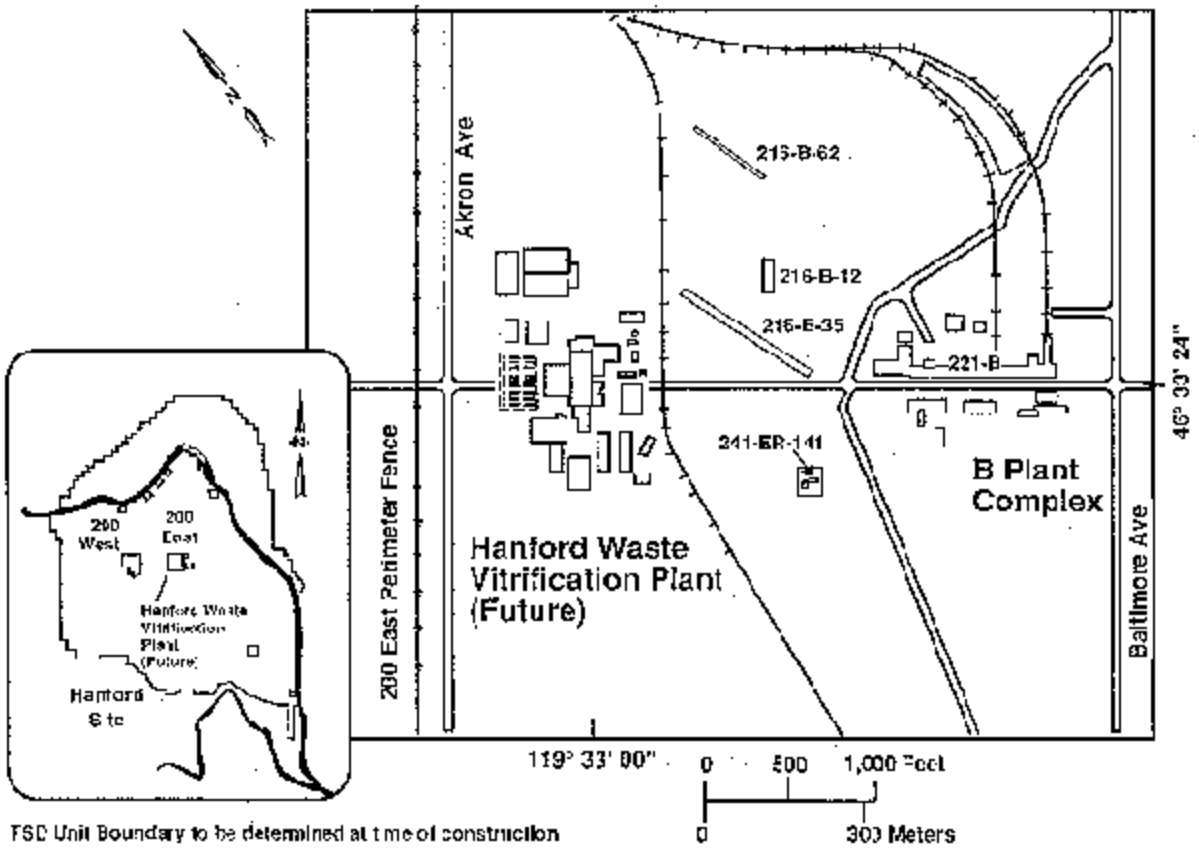
John D. Wagoner
Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

9/26/96
Date

H.J. Hatch
Co-Operator
H. J. Hatch
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

9/13/96
Date

Hanford Waste Vitrification Plant
Future Site Plan



H96070161.2

HANFORD WASTE VITRIFICATION PLANT
PROPOSED LOCATION--AERIAL VIEW

46°33'12"
119°33'00"

8600906-13CN
(PHOTO TAKEN 1986)

HANFORD WASTE VITRIFICATION PLANT
FUTURE CONCEPTUAL LAYOUT

46°33'12"
119°33'00"

90112857-1CN
(PHOTO TAKEN 1990)